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ENGLISH TRANSLATION OF CLAIMS
AS AMENDED IN THE INTERNATIONAL APPLICATION

NATIONAL PHASE SUBMISSION

Claims

1. Method for commutating the at least one phase (Pi) of an electric motor (1), in which the commutation angle (α) of the phase or of each phase (Pi) is continuously varied as a function of the rotary frequency (f) of the electromagnetic energizing field (F) of the electric motor (1) and/or of an adjustable variable (S) for the drive power.
characterized in that a full cycle (10) of the energizing field (F) is divided into a number (n) of zones (Zi) and the phase or each phase (Pi) is commutated in accordance with a control pattern (12,12') stored depending on these zones (Zi) with the angular extent (δ1,δ2) of at least two zones (Zi) being varied for setting the commutation angle (a).

2. Method in accordance with claim 1,
Method in accordance with claim 1, characterized in that the full cycle (1) is divided into alternating consecutive zones (Zl) of a first group and zones (Zm) of a second group, with zones (Zl, Zm) of the same group each featuring the same angular extent (δ1,δ2).

3. Method in accordance with claim 2,
characterized in that the phase or each phase (Pi) is activated via an odd number (m) of consecutive zones (Zi).

4. Method in accordance with one of the Claims 1 to 3,
characterized in that the commutation angle (a) is varied between a minimum value corresponding to a low speed (f)

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and/or power and maximum value corresponding to a high speed (f) and/or power.

5. Method in accordance with one of the Claims 1 to 4, characterized in that the characteristic variable (S) for the power () included for adjusting the commutation angle (α) is derived on the basis of the rotary frequency (f) and an associated required value (f0).

6. Method in accordance with one of the Claims 1 to 5, characterized in that, the phase or each phase (Pi) is activated pulse-width modulated depending on the rotary frequency (f) of the energizing field (F) and/or the adjustable variable (S).

7. Method in accordance with claim 6,
Method in accordance with claim 1, characterized in that, in a low-performance range (1) identified by a low value of the rotary frequency (f) or adjustable variable (S) with a constant commutation angle (a) the phase or each phase (Pi) is activated pulse-width modulated and in a mid performance range (21) identified by a high value of the rotary frequency (f) or adjustable variable (S) the commutation angle (α) is varied.

8. Method in accordance with one of the Claims 1 to 7, characterized in that the phase or each phase (Pi) is activated in a unipolar manner. .

9. Method in accordance with one of the Claims 1 to 8,

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characterized in that the phase or each phase (Pi) is activated in a bipolar manner. .

10. Device (9) for commutating the at least one phase (Pi) of an electric motor (1), with a converter (5) and a control unit (6) for the converter (5), which is embodied to execute the method in accordance with one of the claims 1 to 9.

11. Device (9) in accordance with Claim 10, characterized by a sensor (8) which determines the orientation and/or the rotary frequency (f) of the energizing field (F) feeds it to the control unit (6) as an input variable.